INTERNATIONAL QUALIFICATIONS

AND ASSESSMENT CENTRE (IQAC)

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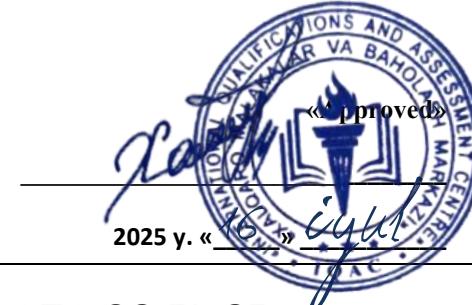
Programme	**LEVEL 5 EXTENDED DIPLOMA IN DATA SCIENCE**	
Unit Number/ Unit Title	UNIT 9 DATA ETHICS AND PRIVACY	
Cohort Code:	L05DEP-U9	
Unit Level	Level 5	
Total GLH	Total qualification time 200/ Total Guided learning hours 90/ Self-guided learning hours 110	
Credits	20 CATS/ 10 ECTS	
Lecturer		
Start Date		**End Date**

Unit Aims	This module aims to explore ethical issues and privacy concerns related to data collection, usage, and dissemination in data science.
Differentiation Strategies *(e.g. planned activities or support for individual learners according to their needs)*	The total number of students to be in the lesson is approximately 20. This is a multicultural group of students predominantly between the ages of 24 – 45, with numerous ethnic, gender, and creed background. These are UK academic level 5 students; hence it is assumed that they have practical, theoretical, or technological knowledge and understanding of a subject or field of work to find ways forward in broadly defined, complex contexts. These students must be able to generate information, evaluate, synthesise the use information from a variety of sources. Various approaches to addressing the various identified students needs will be adopted throughout the lesson. Such will include:- 1. Progressive tasks 2. Digital resources 3. Verbal support 4. Variable outcomes

	5. Collaborative learning 6. Ongoing assessment 7. Flexible-pace learning
Equality & Diversity	Variety of teaching techniques will be employed to ensure that the needs of each individual learner are met.
Safeguarding & Prevent	Safeguarding policies and the Prevent duty are strictly observed to ensure the safety, well-being, and inclusivity of all students and staff.
Health & Safety	SIRM H&S policies will be maintained.
	Teaching and Learning Materials
Learning Resources	• Mittelstadt, B. D., Floridi, L., & O'Brien, H. (2016). The Ethics of Data Science: The Landscape of Contemporary Issues. Springer. • Solove, D. J. (2013). Privacy Law Fundamentals. IAPP. • Tene, O., & Polonetsky, J. (2013). Privacy in the Modern Age: The Search for Solutions. The New Press.

Learning Outcome	Assessment Criteria
LO1. **1. Understand ethical considerations in data science.**	1.1 Define ethics and its importance in data science. 1.2 Identify ethical issues related to data collection, manipulation, and usage.
LO2. **2. Develop knowledge of data privacy regulations.**	2.1 Explain legal frameworks and regulations governing data privacy. 2.2 Analyze privacy implications of data handling practices.
LO3. **3. Apply ethical principles to data science practices.**	3.1 Evaluate ethical dilemmas in real-world data science scenarios. 3.2 Propose strategies to mitigate ethical and privacy risks in data science projects.

No	Learning Outcome / Topic	Learning and Teaching Activities	Which assessment criteria does the session relate to?	Day/month/year/ signature
1.	**Introduction to Data Ethics**	**Introduction to Data Ethics** Definition, importance, and ethical decision-making frameworks	LO1: Foundations of Data Ethics	
2.	**Ethical Issues in Data Collection**	**Ethical Issues in Data Collection** Informed consent, data ownership, surveillance concerns	LO1: Foundations of Data Ethics	
3.	**Bias and Fairness in Data Science**	**Bias and Fairness in Data Science** Algorithmic bias, fairness metrics (demographic parity, equal opportunity)	LO1: Foundations of Data Ethics	
4.	**Transparency and Accountability**	**Transparency and Accountability** Explainable AI (XAI), model documentation (datasheets, model cards)	LO1: Foundations of Data Ethics	
5.	**Case Study: Ethical Failures**	**Case Study: Ethical Failures** Cambridge Analytica, biased hiring algorithms	LO1: Foundations of Data Ethics	
6.	**GDPR (General Data Protection Regulation)**	**GDPR (General Data Protection Regulation)** Key principles, individual rights, penalties	LO2: Data Privacy Regulations	
7.	**CCPA & Other US Privacy Laws**	**CCPA & Other US Privacy Laws** California Consumer Privacy Act, sector-specific regulations (HIPAA, COPPA)	LO2: Data Privacy Regulations	
8.	Half-Term Exam	- Review of LO1 topics - Practice questions and mock assessment - **Half-term assessment** based on LO1 (theory)	LO1 LO2	
9.	**Global Privacy Frameworks**	**Global Privacy Frameworks** PIPEDA (Canada), LGPD (Brazil), PDPA (Singapore)	LO2: Data Privacy Regulations	

10.	**Data Localization & Cross-Border Data Flows**	**Data Localization & Cross-Border Data Flows** EU-US Privacy Shield, China's data sovereignty laws	LO2: Data Privacy Regulations	
11.	**Privacy by Design**	**Privacy by Design** Principles, implementation strategies	LO2: Data Privacy Regulations	
12.	**Anonymization & Pseudonymization**	**Anonymization & Pseudonymization** Techniques (k-anonymity, differential privacy)	LO3: Ethical Data Handling Practices	
13.	**Ethical Data Sharing**	**Ethical Data Sharing** Data trusts, federated learning	LO3: Ethical Data Handling Practices	
14.	Final Exam Preparation & Review	- Comprehensive review of all learning outcomes - Practice questions and revision of key topics		
15.	Final Exam	- **Final-term assessment** covering all learning outcomes (theory and practical elements)		
16.	Feedback & Reflection	- Review of final exam - Individual feedback on performance - Reflective discussion on key learning points		
17.	**Ethical AI Development**	**Ethical AI Development** Human-in-the-loop, bias mitigation tools (IBM AIF360, Fairlearn)	LO3: Ethical Data Handling Practices	
18.	**Ethical Dilemmas in Emerging Tech**	**Ethical Dilemmas in Emerging Tech** Facial recognition, predictive policing, generative AI	LO3: Ethical Data Handling Practices	
19.	**Stakeholder Engagement**	**Stakeholder Engagement** Involving communities in data projects	LO3: Ethical Data Handling Practices	

20.	**Ethical Impact Assessments (EIAs)**	**Ethical Impact Assessments (EIAs)** Templates, case studies (e.g., AI in hiring)	LO4: Risk Mitigation & Compliance	
21.	**Auditing AI Systems**	**Auditing AI Systems** Algorithmic audits, third-party reviews	LO4: Risk Mitigation & Compliance	
22.	**Whistleblowing & Accountability**	**Whistleblowing & Accountability** Case study: Facebook whistleblower Frances Haugen	LO4: Risk Mitigation & Compliance	
23.	Half-Term Exam	**Debate: Privacy vs. Innovation** Student-led discussion on surveillance capitalism		
24.	**Corporate Responsibility**	**Corporate Responsibility** Ethics committees, AI governance frameworks	LO4: Risk Mitigation & Compliance	
25.	**Open Source vs. Proprietary Data**	**Open Source vs. Proprietary Data** Licensing, ethical implications of data monopolies	LO4: Risk Mitigation & Compliance	
26.	**Policy Proposal Exercise**	**Policy Proposal Exercise** Drafting a privacy policy for a hypothetical company	LO5: Capstone & Advocacy	
27.	**Ethical Data Science Project**	**Ethical Data Science Project** Redesign an existing project with ethical safeguards	LO5: Capstone & Advocacy	
28.	**Future Trends** and **Final Presentation**	**Future Trends** AI ethics in Web3, metaverse privacy challenges **Final Presentation** Advocate for an ethical data practice in a real-world scenario xcvvfbxcxfxfk	LO5: Capstone & Advocacy	
29.	Final Exam Preparation & Review	LO1, LO2, LO3, LO4	LO1, LO2, LO3, LO4	
30.	Final Exam		LO1, LO2, LO3, LO4	